



UNIVERSITY OF WISCONSIN AGRONOMY, SOYBEAN RESEARCH, UNIVERSITY OF WISCONSIN-EXTENSION

### Harvest timing of winter wheat to maximize yield and minimize elevator discounts - 2017

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#### In a glume

- Wheat yield declined after our second harvest timing (< 16% moisture), but remained stable afterward
- We noted no consistent harvest date by test weight response
- All of the difference in discount between the early harvest and late harvest came from the moisture component and none from test weight
- Though some shrinkage was noted (10% at the early date and 1% at the late date) the greatest ROI occurred once we hit 14% moisture
- Note no fusarium head blight (FHB) was noted so DON was not an issue. In a FHB year, greater moisture discounts may offset increased DON caused by delayed harvest

A research trial was initiated in the fall of 2016 at the Arlington Agricultural Research Station, Arlington, WI to assess the impact of delayed grain harvest on yield and test weight in soft red winter wheat. Five dates of harvest were used starting when the grain moisture was about 17% and proceeding at ~5 day intervals. Five cultivars of wheat were chosen to represent a range of test weights and were based on the test weight measured in the 2016 WI Wheat Performance Trials. Test weights of the varieties selected ranged from 55 to 60 lbs/bu in the 2016 Trials. Normal, UWEX recommended crop management and fertilization practices were used in this trial.

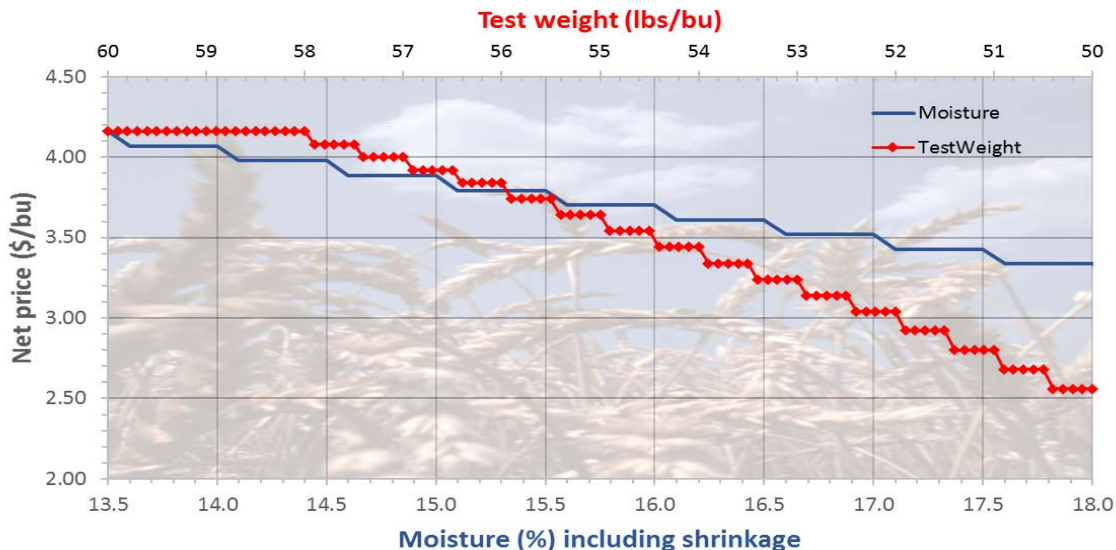


Fig. 1 Net wheat price (market price minus discounts) based on \$4.16/bu wheat market price using test weight or moisture plus shrinkage discounts as advertised by a commercial elevator in south central Wisconsin during the 2017 wheat harvest season.

Table 1. Materials, methods, and location information.

<b>Year:</b>	<b>2016-2017</b>		
<b>Expt. No.</b>	<b>17097</b>		
<b>Title:</b>	<b>Harvest Date Effect on Winter Wheat Yield and Test Weight</b>		
<b>Personnel:</b>	<b>Dr. Shawn Conley, John Gaska, and Adam Roth</b>		
<b>Organization:</b>	<b>University of Wisconsin-Madison, Dept. of Agronomy</b>		
<b>Location:</b>	<b>Arlington Agricultural Research Station, Arlington, WI</b>		
<b>FIELD INFORMATION</b>			
Field:	248W		
Previous Crop:	Soybean		
Soil fertility:	pH: 6.9 O.M.: 3.7 % P: 42 ppm K: 112 ppm		
Tillage:	No-tillage		
<b>EXPERIMENTAL PROCEDURE</b>			
Exp. Design:	RCB Split plot		
Replicates:	4		
Variables:	5 harvest dates 5 varieties		
Plot Size:	Planted:	8' x 25'	
	Harvested:	5' x 21'	
Row Spacing:	7.5"		
Cultivars:	5 varieties		
Planting:	Date:	4-Oct-16	
	Equipment:	No till plot planter	
	Rate:	variable with treatment	
	Depth:	1"	
Harvesting:	Date:	14-July, 18-July, 24-July, 28-July, 31-July-2017	
	Equipment:	2010 Almaco SPC-40 plot combine	
	<u>Material</u>	<u>Rate</u>	<u>Use</u>
Pesticides:	Huskie	15 fl oz/a	Herbicide

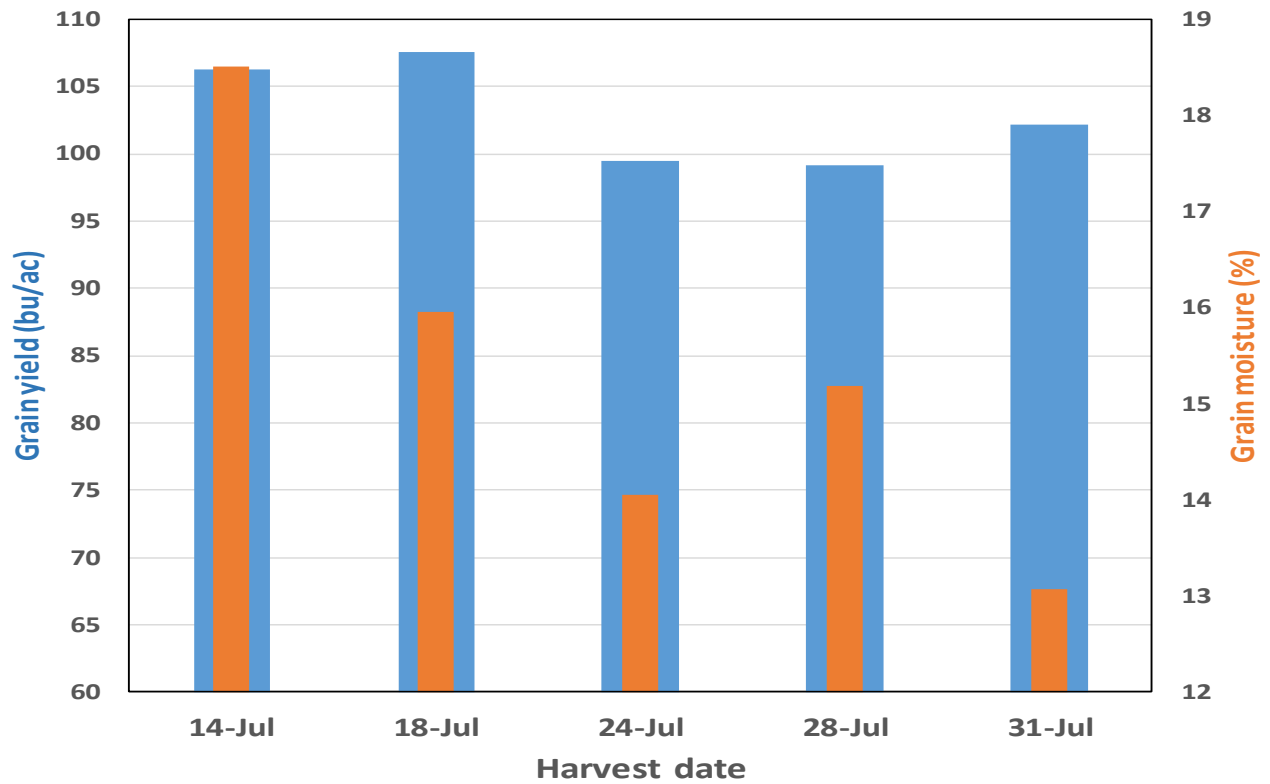


Figure 2. Grain yield (adjusted to 13.5% moisture content) and moisture of five harvest dates across five wheat varieties.

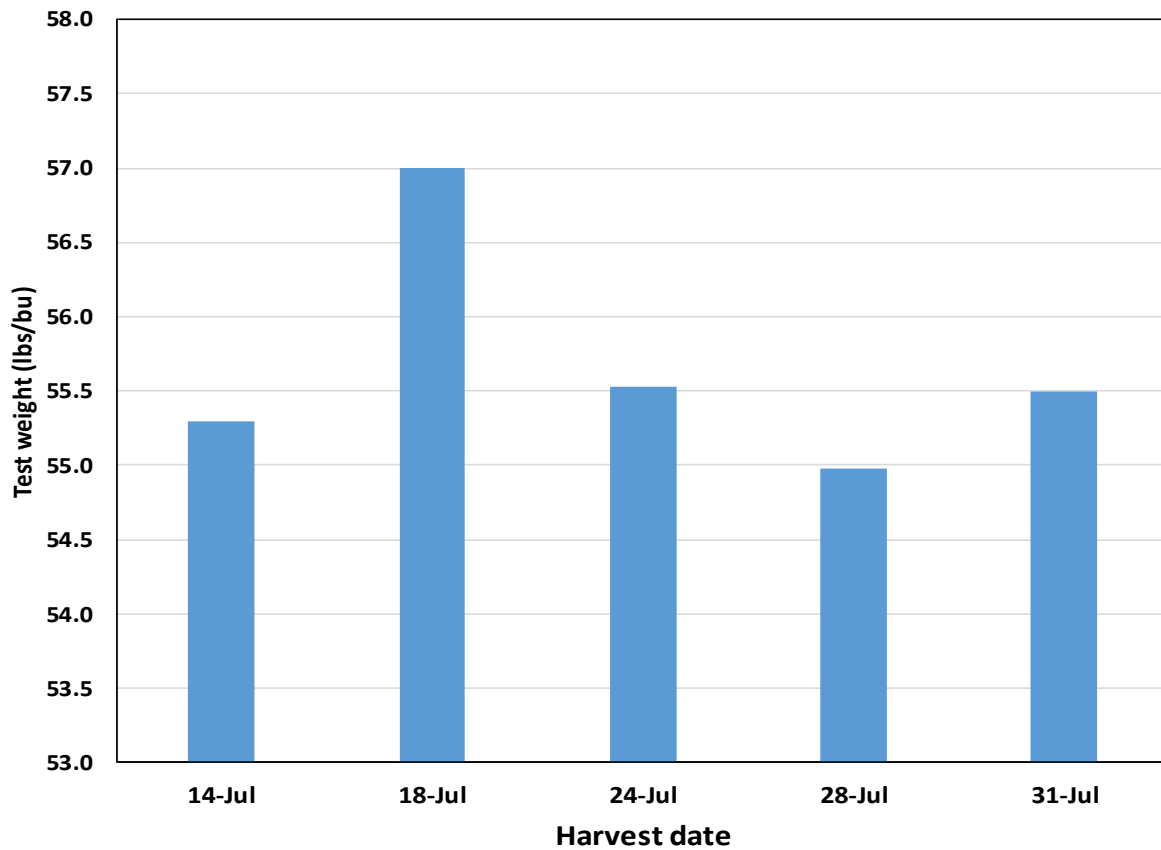


Figure 3. Grain test weight of five harvest dates across five wheat varieties.

Table 2. Yield, moisture, and test weight of five harvest dates and five wheat varieties.

Harvest date	Brand	Variety	Grain		Test
			yield <sup>1</sup> bu/ac	moisture %	weight lbs/bu
	PiP	PiP 776	100.3	15.4	54.4
	FS Seed	FS615	105.7	15.3	55.3
	Syngenta	SY547	99.4	15.3	55.3
	DuPont Pioneer	P25R40	112.0	15.1	55.4
	Public	Sunburst	97.1	15.6	57.9
14-Jul			106.3	18.5	55.3
18-Jul			107.5	16.0	57.0
24-Jul			99.4	14.1	55.5
28-Jul			99.1	15.2	55.0
31-Jul			102.2	13.1	55.5
14-Jul	PiP	PiP 776	99.2	18.7	54.2
14-Jul	FS Seed	FS615	107.9	18.1	55.0
14-Jul	Syngenta	SY547	104.1	18.9	54.3
14-Jul	DuPont Pioneer	P25R40	119.2	17.7	55.8
14-Jul	Public	Sunburst	100.9	19.2	57.3
18-Jul	PiP	PiP 776	105.5	15.9	55.3
18-Jul	FS Seed	FS615	109.5	16.0	56.4
18-Jul	Syngenta	SY547	102.5	15.9	56.9
18-Jul	DuPont Pioneer	P25R40	119.4	15.7	56.7
18-Jul	Public	Sunburst	100.7	16.3	59.7
24-Jul	PiP	PiP 776	96.7	14.1	54.3
24-Jul	FS Seed	FS615	104.6	14.1	55.1
24-Jul	Syngenta	SY547	96.1	13.9	55.3
24-Jul	DuPont Pioneer	P25R40	107.4	14.0	55.1
24-Jul	Public	Sunburst	92.4	14.2	57.9
28-Jul	PiP	PiP 776	98.1	15.3	53.6
28-Jul	FS Seed	FS615	101.2	15.2	54.8
28-Jul	Syngenta	SY547	95.6	15.0	54.7
28-Jul	DuPont Pioneer	P25R40	104.9	15.1	54.6
28-Jul	Public	Sunburst	95.6	15.4	57.1
31-Jul	PiP	PiP 776	102.0	13.0	54.6
31-Jul	FS Seed	FS615	105.2	13.2	55.0
31-Jul	Syngenta	SY547	98.7	13.0	55.3
31-Jul	DuPont Pioneer	P25R40	109.2	13.0	54.9
31-Jul	Public	Sunburst	95.8	13.1	57.7
Means			102.9	15.4	55.7
<b>Probability (Pr&gt;F)</b>					
Harvest date			<.0001	<.0001	<.0001
Variety			<.0001	0.0010	<.0001
Harvest date x variety			0.5665	0.0269	0.2670

<sup>1</sup>Yield is reported at 13.5% moisture content

## Results

Harvest date and variety were significant for grain yield, moisture, and test weight, although the interaction of harvest date and variety for these measured responses were not significant. Harvest grain moisture targets were met resulting in a wide range of moistures to evaluate test weight and moisture discounts. Based on the values in Fig. 1, the discounts (moisture+shrinkage and test weight) for the first harvest date equaled \$1.12 and the discount for the last harvest date totaled \$0.42, a difference of \$0.70/bu. All of the difference in discount between the early and late harvests came from the moisture component and none from test weight. Reductions in moisture as the season progressed were expected and were noted in this study. Anecdotal evidence from wheat growers of test weight reduction as the harvest season progressed were not observed in this study in 2017. This study will be repeated in 2018.